EVALUATION OF THE CANADA WATER ACT AND FUNDING

ENVIRONMENT CANADA STUDY TEAM

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Lorette Goulet
Assistant Deputy Minister
Conservation and Protection
Environment Canada
Ottawa, Ontario
K1A 0H3

Madam:

Please find attached the report of the study team established for the purpose of evaluating the Canada Water Act. The report has been circulated widely within Conservation and Protection and comments considered and included where appropriate.

The study team has reached a number of conclusions in its review of projects which are, or have been, carried out under the Act and gone on to chart a future course of action. The recommendations in the report, if implemented, will move the activities under the Act in the direction of these future needs.

The study team is prepared to meet with you at any time to expand on any aspect of the report, or to undertake further activities which will result in implementation of the recommendations.

D.A. Davis

J.A. Jackson

J.E. Vollaershausen

P.R.W. Gore

B.M. Burns

R.L. Pentland

Canada

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EXECUTIVE SUMMARY

The Canada Water Act (CWA), proclaimed on 30 September 1970, has been the primary delivery vehicle for joint federal-provincial studies and implementation measures to ensure wise use of the water resource. The transfer of Part III (nutrients) of the Act to the Canadian Environmental Protection Act, the fact that signed Agreements now exceed the contribution resource ceiling, and the perception that priorities do not reflect the federal water policy or current DOE concerns to the extent possible, have resulted in Conservation and Protection initiating an evaluation of the CWA and charting a recommended course for the future.

The Canada Water Act provides a comprehensive and broad legislative base which encourages and facilitates joint federal and provincial water resource planning, studies and implementation. Activities under the Act have included comprehensive basin studies, the flood damage reduction program, interprovincial water allocation and regulation arrangements, support to Great Lakes Water Quality Agreement surveillance and research programs, the Pearse Inquiry on Federal Water Policy, and construction of water related projects. Funding for activities has included a combination of external special purpose funds and the CWA fund, which now has an expenditure ceiling of $9.2 million per annum. The mix and types of projects have varied over the years, dependent on the stage of evolution from studies to implementation, increasing provincial capabilities, external influences such as termination of CMHC infrastructure funding, and changing departmental priorities as the organization of government evolved.

The review team has concluded that over the years the CWA has exerted a major influence on provincial and other federal agency water policies, has been a positive factor in federal-provincial relationships, opening the door for other departmental initiatives, and has resulted in better decision making on federal investments in water projects. The review team also concluded that the potential return on investment is greater with overview or issue-oriented studies than with comprehensive basin studies, and a phase-down strategy should be developed for the Flood Damage Reduction Program. In looking to the future, the review team has developed a number of recommendations, listed in the following section, which would: shift the planning initiatives under the CWA toward increasing support for resource conservation strategies; emphasize the links between water and the economy and the role of pricing; and facilitate development of water awareness programs. The review team believes that a start can be made on these new directions with existing resources through a combination of measures including a careful phasing down of flood risk mapping activities, and by funding major flood mitigation works from sources external to the CWA fund, parallel to the present federal approach to funding of municipal infrastructure projects.

The need for Canada Water Act activities to adapt to regional requirements has been highlighted throughout the report as has the study team's view that the Act is able to adapt to such variables. The value of the accomplishments and benefits that have emerged both directly and indirectly from the Act's implementation are highly regarded by both Federal Administrators and their Provincial counterparts. Change must therefore be managed with both skill and sensitivity.

SUMMARY OF RECOMMENDATIONS

Environment Canada should:

1. Develop more flexibility in the management of the Canada Water Act fund by adoption of the following strategies:

(a) Phasing down of the Flood Damage Reduction Program over a five-year period, and concentrating efforts on the development of low cost maintenance programs designed to protect the integrity of the policies and agreements that have been developed to date. It is the view of the study team that, by the end of the five-year period, such a maintenance program for mapping and designation could be effectively managed with annual contributions of approximately $1,000,000. Planning for this phasing down should be completed in time for incorporation in the next 5-year expenditure plan (spring of 1988).

Coincidental with this effort, the federal funding for new flood control works of national significance should be found from outside the CWA, paralleling the policy currently in place concerning the federal funding of municipal infrastructure projects. The study team believes that other flood control works primarily of provincial or local significance should be funded by other levels of government.

(b) Making more use of work-sharing arrangements with others in pursuit of applied research efforts, or socio-economic studies. A major input from the federal government would be provided by the Research Institutes, which would provide a major opportunity to effect technology transfer. Socio-economic expertise is available in the Water Planning and Management Branch at both Regional and Headquarters levels.

(c) Cost recovery has proven successful as an income generator in other areas of the department. Within the broader context of the Canada Water Act it is important that all opportunities for cost recovery should be acted upon. Work should begin immediately to develop this suggestion further.

(d) Including sunset clauses in all future agreements.

2. As more flexibility results from the initiatives under 1 above, make CWA funds available to meet the most urgent requirements resulting from the new Federal Water Policy, and as defined in Chapter IV of this report, including:

- the examination of the economic value of water as a commodity, and improved approaches for supply and demand management and conservation;

- encouragement of a uniform approach to establishing water quality objectives across Canada for the preservation of water quality;

- development of appropriate strategies, national guidelines and activities for ground water assessment and protection;

- integrated planning in areas of federal jurisdiction and in interjurisdictional waters, subject to federal-provincial-territorial agreements, in order to ensure that all values are given full consideration;

- development of guidelines and criteria for assessing interbasin transfers;

- establishment of mechanisms with the provincial and territorial governments to ensure the protection of northern water interests;

- enhancement of the understanding of the impact of climate change and variability on water resources;

- encouragement of more environmentally compatible works and environmental industries by demonstrating technological leadership in this area;

- development of water-economy agreements in support of general conservation strategies, and other initiatives related to sustainable management of water supply and quality;

Given the importance placed on Canada Water Act processes and projects by the provinces, consultations should occur before major funding shifts or changes in emphasis are promulgated and implemented.

3. Develop and implement a communications strategy to promote the following objectives:

- recognition by the general public that water is not an inexhaustible resource, and that a balance between supply of clean water and demand can only be maintained by a rational approach to water management and water-use pricing;

- general awareness of the need for water conservation and management of water resources - surface and ground water - through a continuing process of public information and education aimed at both quantity and quality issues;

- maximum influence on other levels of government and non-governmental agencies (e.g. mortgage and lending institutions) to encourage them to pursue policies consistent with sound water conservation and management practices, including avoidance of exposure to economic risk through flooding.

4. Contribute to the continuing evolution of federal water policy in the context of the constitutional environment resulting from the May 1987 Meech Lake Accord. It is clear that the Accord will cause the administration of the CWA to reflect:

- a need for a higher degree of sensitivity to provincial concerns;

- a need to find alternatives to national programs in achieving federal water policy objectives;

- a need to focus more clearly on areas of federal or joint jurisdictional responsibility.

5. While the issue was not within its direct mandate, the study team believes that high priority should be given to the recently initiated water resource legislation review, and that the following aspects should be considered:

- Part II of the existing Canada Water Act should be retained, but invoked only in clear cases of urgent national concern;

- revised water legislation should include provisions to deal with potential interprovincial conflicts;

- new legislation should reflect the concept of a "Ministry of State for Water" role for Environment Canada, recognizing its position as the lead federal department in this area;

- the legislative review group should carefully assess possible impacts of the Meech Lake Constitutional Accord both on the proposed legislative revisions, and on the range of activities that might be undertaken under the Act.

6. Assume a leadership role on the Interdepartmental Committee on Water, the CCREM Water Advisory Committee, and in re-establishing federal-provincial consultative committees on water issues.

EVALUATION OF THE CANADA WATER ACT AND FUNDING

INTRODUCTION

The evaluation of Canada Water Act (CWA) activities and charting of new directions was carried out by a study team composed of six senior headquarters and regional Department of Environment managers. Membership of the study team, terms of reference for the evaluation and a list of reference documents are attached as Appendix 1.

The report includes chapters which cover the history of the CWA, evaluation of the Act's potential, the documentation of expenditures by year and project type, and the regional distribution of expenditures. The report then evaluates the impacts of the Act in terms of its influence, and defines future directions which would best meet the needs of the Federal Water Policy and changing external and internal influences. The report includes recommendations which, if implemented, will move CWA programs toward the defined future directions.

CHAPTER I - REVIEW AND EVALUATION OF THE CANADA WATER ACT

History of the Act

1. Prior to the Canada Water Act, activities related to water resource management were largely of a data gathering nature or directed to providing financial assistance towards the cost of construction where a project was either in the national interest (e.g. the Winnipeg Floodway), or provided for in federal legislation such as the Canada Water Conservation Assistance Act. The Water Resources Branch of the Department of Northern Affairs and National Resources, which evolved into Inland Waters and Lands, DOE, was also very active as the federal source of expertise in hydroelectric energy projects, particularly those of an interjurisdictional nature, during the period 1955-1965. With the formation of the National Energy Board (1960) and the Department of Energy, Mines and Resources (1965) and its energy sector, the energy aspect ceased to be a major thrust of the water sector under IWD.

2. Beginning in the early Sixties concern was being expressed by central agencies about the adequacy of the federal government merely responding to such requests for implementation funding on an ad hoc basis without first having input to the planning phase. This concern was fueled as well by the limited scope or purpose of many of the proposed

projects and the heavy emphasis on structural solutions to the neglect of other alternatives. Somewhat later in the Sixties, pressures developed for a higher degree of public participation in the planning process, and a special concern was raised over the degradation of water quality of the Nation's rivers and lakes and its concomitant social, economic, and environmental effects.

3. The eventual outcome was the Canada Water Act of 1970. Part I of the Act provides for the establishment of formal federal-provincial consultative arrangements for discussion of water resource matters; and for cooperative agreements with the provinces for the development of comprehensive plans for the management of water resources and for implementation of these plans. This part also enables the Minister, directly, or in cooperation with any provincial government, institution or person, to conduct research, collect data and establish inventories respecting any aspect of water resource management.

4. Although the Act was not proclaimed until 30 September 1970, certain planning agreements were signed before this date with British Columbia (Okanagan River Basin Agreement - October 1969), with New Brunswick (Saint John River Basin Agreement - June 1970) and with Saskatchewan and Manitoba (Qu'Appelle River Basin Agreement - August 1970). Following proclamation of the Act, informal consultative committees were formed with most provinces. None of these was taken to the stage of being formalized by approval of the Governor in Council, as

specified in the Act, and, over time, began to be replaced by other mechanisms, usually administrative in nature and associated with specific agreements.

5. Since 1970, the federal government has made commitments of the order of $150 million as its share towards joint planning and implementation activities. This figure excludes monies expended in furtherance of its A-base programs such as data gathering and international investigations. It includes the federal share of large implementation programs such as the Fraser River Dyking and other flood control programs, and the cost of Boards such as the Prairie Provinces Water Board. From the beginning, agreements have been widely varying in scope - some early examples include comprehensive agreements (Okanagan, Qu'Appelle, Saint John, Souris), and water quality oriented agreements (Lower Great Lakes, St. Lawrence). Some later examples included environmental impact initiatives (Churchill, Churchill-Nelson and Peace-Athabasca); studies of interest to federal health, fisheries and Indian agencies (English-Wabigoon and Northern Manitoba Mercury Studies) and some related to overall federal strategies (e.g. flood risk mapping and designation). More recent examples include water quantity oriented agreements (Ottawa River Regulation), A-base work sharing arrangements (Winter River, P.E.I. and Waterford River, Nfld.) and water-economy planning studies (P.E.I.).

6. Figure 1 provides a listing of completed planning and implementation agreements, current on-going planning and implementation agreements, and long-term activities financed under the auspices of the Canada Water Act.

7. Part II of the Act, simply stated, envisions federal-provincial agreements where transboundary water quality has become "a matter of urgent national concern". It permits the establishment of joint federal-provincial incorporated agencies (although existing federal and provincial corporations might alternatively be used) to plan and implement approved water quality management programs. The Act also allows for unilateral federal initiatives to be undertaken if joint arrangements are impossible to put in place. Fortunately, it has never been necessary to establish joint management areas under this portion of the Act, though it can be argued that the Canada-U.S. and Canada-Ontario agreements on Great Lakes water quality meet many of the objectives that would pertain to such an area. Water quality management areas can be established for any "federal waters" without demonstrating that water quality has become a matter of urgent national concern. However, as in the federal-provincial case, no water quality management areas have been declared.

8. Part III of the Act provides for the passing of regulations banning the manufacture or import for use or sale in Canada of any cleaning agent or water conditioner that contains a nutrient in a greater concentration than that prescribed by regulations. It provides one of the principal means of controlling the rate of eutrophication of water bodies (In the case of Lake Erie, Part III of the Act contributed to effects that, in fact, reversed the rate of eutrophication - a

significant achievement) by restricting input of nutrients. Initially the phosphorus content was limited to not more than 20 percent by weight of phosphorus pentoxide and subsequently, as of 1 January 1973, to 5 percent. It has been estimated that the 20 percent limitation meant a reduction of 13 million pounds (from 57 million pounds) and that the 5 percent limitation has meant a further reduction of 33 million pounds (to a current level of 11 million pounds from this source). This Part of the Act is scheduled to be transferred to the proposed Canadian Environmental Protection Act.

9. Under Part IV are provisions for the general administration of the Act. In addition, it permits the Minister to establish Advisory Committees and either directly, or in cooperation with any government, institution or person, to undertake public information programs. Some important activities carried out under Part IV have been the publication of a series of Canada Water Year Books and the establishment of the Pearse Inquiry on Federal Water Policy as an advisory committee under the CWA. An annual report to Parliament is also required by this Part of the Act.

10. In what follows, references to the Canada Water Act will be taken to mean Part I activities, unless otherwise specified.

Evaluation of the Act's Potential

11. The Canada Water Act is typically described as being framework or enabling legislation. As such it embraces the full range of activities (research, data collection, planning, implementation and overseeing a program over the longer term, etc.) and does not restrict the water uses to be considered or the financing arrangements. This is almost in deliberate contrast with the provisions of the Canada Water Conservation Assistance Act which it replaced and which specified the federal contribution (37 1/2 per cent), restricted contributions to major conservation (mainly flood control) works, and allowed for contributions to implementation only.

12. It would be wrong, however, to typify the Canada Water Act as purely reactive to the deficiencies of the previous legislation. Part I is an attempt to unify quality and quantity considerations by making no distinction between them, and reflects the union effected by placing both components in the water sector in EMR. It also makes no distinction between ground water and surface water and additionally, attempts to capture the entire range of "federal" and "national" interests under its ambit as its title, and references to "federal" and "interjurisdictional" waters indicate. The Act undoubtably reflects the views of some of its prime movers as well as then current trends. MacNeill with his experience with the Saskatchewan Water Commission placed emphasis on the inter-governmental institutional framework; Davidson with his experience

with the adaptable approach of the Agricultural and Rural Development Act (ARDA), and Tinney with his experience in the U.S. where regional water commissions represented both federal and state agencies, all contributed, with the result that the Act is both comprehensive and framework in nature. In contrast, Part II which proposes water quality management agencies (and which owes its origins to the water pollution control agencies in the Ruhr Valley) was more politically inspired and illustrated the federal government's willingness in 1970, to act in cases where gross pollution became a "matter of urgent national concern". Part III is specific to nutrients (phosphorous) in detergents and employs a direct regulatory approach.

13. The very nature of the Canada Water Act, with its broad and comprehensive approach to water resource management, meant that the legislation itself did not define in detail the guidelines or criteria to be applied. Based on instructions from Treasury Board on the kinds of programs to which resources could be applied, guidelines on the Flood Damage Reduction Program contained in Cabinet decision documents and pragmatic experience in the delivery of the program, guidelines and criteria on program management gradually evolved. The Interdepartmental Committee on Water also played a role. A number of "principles" were introduced and were reflected in subsequent agreements or in the managerial decision making framework. Examples of these principles include:

- pre-assessment or evaluation activities should precede implementation,

- flood mitigation works must have a benefit/cost ratio of 1:1 or better,

- there should be a local contribution (municipal) to flood mitigation works of at least 10 percent,

- in no case should the federal financial contribution exceed 50 percent,

- specific agreements should deal with issues or problems of national significance,

- where possible the program should reflect the regional diversity of the Canadian mosaic.

14. The three pilot comprehensive studies (Saint John, Qu'Appelle and Okanagan) which were initiated prior to the Canada Water Act and IWD's involvement in environmental impact studies (Peace-Athabasca Delta, James Bay) constituted the main activities in the initial years of the Act. A number of agreements and on-going projects (Fraser River Dyking, Saskatchewan-Nelson Basin Study) continued on, virtually unaffected by the Act. Before regionalization, a considerable portion of the time of senior Headquarters managers was occupied by membership on these federal-provincial boards and the fledgling consultative committees which were initially established with the provinces.

15. It is difficult to separate the years subsequent to the enactment of the Canada Water Act into clear distinct periods since a federal-provincial agreement in one region was often used as a model for a similar agreement in another region several years later. A rough classification of trends might be as follows:

a. Pilot studies of comprehensive planning - as noted above, these were initiated prior to the passage of the Canada Water Act. The federal government offered financial assistance in the joint planning of a typical river basin in each region - the Saint John, the Ottawa, the Qu'Appelle and Okanagan (Ontario and Quebec declined to participate in the comprehensive study of the Ottawa). While there was a degree of federal interest in each of these basins there was no compelling inter-jurisdictional problems, the basins were small to moderate in size and the issues largely diffuse and local. Later agreements focused on larger basins where major issues existed. To some extent, though, the Thompson Preplanning (1979-82) and Schubenacadie (1974-79) studies dealt with basins of a similar character as the earlier pilot studies . In about 1975, the Department decided to concentrate on inter-jurisdictional waters and accorded a lower priority to intra-provincial waters. One of the considerations behind this decision was that the "technological transfer" aspect of comprehensive planning to the provinces had already been accomplished.

b. IWD also participated in or led several environmental impact studies. The Peace Athabasca study, the Lake Winnipeg, Nelson and Churchill Rivers Agreement, the Churchill (Sask) Agreement, and staff input to the James Bay hydro-electric proposals are major examples. All involved the effects of major hydro-electric projects. With the establishment of FEARO through Cabinet directive in December, 1973, the growing concern by provinces over mitigating environmental effects of such projects, and the decline in the number of such projects being considered, the Canada Water Act gradually ceased to be the vehicle by which IWD became involved in impact studies. Certainly, IWD has continued to participate in the EARP process as it is applied by Environment Canada, as its heavy involvement in such projects as the Slave River hydro-electric development and Shoal Lake shore development attest.

c. Water quality concerns also emerged as an important factor early in the period, especially as it became clear that initiatives could be undertaken under Part I of the Act, and that it was unnecessary to use the more heavy handed provisions of Part II. Major water quality agreements were signed for the Great Lakes, the St. Lawrence, and Lake Winnipeg and water quality was also an important element in the Saint John, Qu'Appelle, and Okanagan programs. Water quality studies were carried out under the auspices of the CWA but funding for waste treatment came from established programs in CMHC and DREE.

d. Cabinet approval of the Flood Damage Reduction program in 1975 had a major influence over the allocation of funding and A-base related delivery of the Act over the subsequent 10 year period. This program maps flood prone areas in communities with flood potential, and through formal designation by the federal and provincial ministers, commits the two levels of governments to not support flood prone development within the designated area. Studies of mitigation measures to protect existing development can also be carried out and can lead to joint federal-provincial implementation agreements where economically justified. The goal of the program is to reduce future disaster assistance payments by the federal government through encouragement of compatible land uses rather than structural solutions to flood protection. To date over 60 designations have taken place encompassing more than 300 communities and some 30 percent of the Canadian population. Based on present FDR Agreements, and anticipated requirements in B.C. and Alberta, the mapping and designation process is approximately 70 per cent complete.

e. A further stage related to the North, i.e. the Mackenzie and Yukon Basin Studies. These were unique in that they were concerned with federal waters, involved the provinces as upstream proprietors and DIAND as a full partner. Interestingly, these "federal waters" were the last to be dealt with under the CWA, and unlike other studies which were designed to focus both on

problems and opportunities, tended to focus on protection of environmental integrity and data requirements only.

f. Although it is too early to identify it as a new "stage", there has been a tendency over the past year or so to use water conservation/economic development as a rationale for new CWA activities. Examples are the South Saskatchewan study with its emphasis on reducing water supply constraints to economic development, and the proposed PEI water/economy initiative. This is in line with the theme in the evolving federal water policy, and in recent Ministerial speeches.

16. It can be argued that there have been both successes and failures in the wake of efforts to implement the Canada Water Act. An objective evaluation, however, tends to suggest that there have been no real failures. The Lake Winnipeg Water Quality Agreement, for example, was negotiated and signed, but no activity ever took place due to a lack of provincial funding. This "failure" more accurately reflects a shift in provincial priorities rather than a failure of the Act. The Saint John comprehensive study is regarded by many as having been overdone, though this is primarily because the issue ultimately evolved into a water quality problem caused by one industry. A number of other planning studies did not evolve through to implementation under the CWA (e.g. St. Lawrence Water Quality, Shubenacadie, and most of the environment impact agreements). The Act does not assume that implementation will

automatically follow from the study stage, and as well, a series of factors, including priority shifts, study results, and funding shortfalls could result in a decision not to proceed. It is difficult to characterize such events as a failure of the Act.

17. This evaluation suggests that the success of the Act has, in reality, been quite impressive. The Okanagan study showed that an inter-basin transfer then being considered was not necessary. The Peace-Athabasca Study identified deltas as critical areas and developed the basis for understanding their hydrology and ecology. Implementation of the recommendations has restored close-to-natural water levels. The Fraser River Dyking and most other flood control projects were directed to provide flood protection where floods could prove disastrous. The Canada Water Act has clearly made a significant contribution to knowledge about a whole range of water-related topics and to important mechanisms for promoting federal-provincial co-operation that has in fact, had an impact beyond water-oriented issues.

18. In summary, Canada Water Act programs have evolved within the flexible framework provided by the Act. The evolution has passed through a number of phases related to the needs of the day, guided by a relatively small number of guidelines which have avoided a dissipation of effort. However, the perception continues to exist that the program is weighted in favour of flood mitigation works.

CHAPTER II - HISTORICAL EVOLUTION OF EXPENDITURES UNDER THE CANADA WATER ACT

1. The evolution of expenditures under the Canada Water Act is necessarily complex. Not only have the nature of the federal-provincial agreements changed over time (as described in Chapter I), but the level of available funding also changed both in amount and in form. Funding decisions prior to the Act had been made on a case-by-case basis. This approach was replaced by establishment of a fund within which IWD, on behalf of DOE, was expected to manage a specific range of federal-provincial agreements. These included certain on-going activities but excluded others, for example, the federal-provincial hydrometric agreements and the incipient water quality monitoring agreements. Since provinces were expected to contribute roughly 50 per cent of the cost, the success of the Canada Water Act was greatly influenced by the priority given to water issues by the province concerned, by the availability of provincial funds, and by the existence of other federal funding programs (DREE and CMHC) which could offer the provinces more favorable cost-sharing arrangements or larger total funding than was available under the Canada Water Act.

2. In the analysis which follows expenditures are analyzed in terms of the following periods (a) 1970-1975, (b) 1975 to 1980 and (c) 1980 to the present. Management criteria for project selection have generally included:

- national and regional significance

- regional balance
- return on investment
- potential for "leverage"
- congruency with provincial priorities

3. 1970-1975. From 1970 to 1975, the demand for financial resources to undertake federal-provincial water planning and management projects increased steadily. Actual expenditures were also rising as evidenced in Figure 2, despite the phasing out of expenditures for projects commenced under the defunct Canada Water Conservation Assistance Act (CWCAA). Expectations for future expenditures were raised for several reasons. In the first place, the philosophy of the new legislation resulted in a plethora of pre-planning exercises, some of which were to result in formal federal-provincial planning agreements (e.g. Souris). While it was an important principle that implementation was not to proceed automatically from planning recommendations, nor planning from pre-planning, expectations for some type of follow-through program were often unavoidable. In addition to comprehensive planning studies, strategic planning and environmental assessment studies related to the development of hydro-electric power sites (e.g. James Bay) came to the forefront. In certain cases these were done post-facto (e.g. Lake Winnipeg-Churchill- Nelson and Peace-Athabasca Delta studies). In addition, the signing of the first Canada-United States Great Lakes Water Quality Agreement in 1972 signaled the beginning of a parallel long-term commitment to share Great Lakes research and pollution monitoring costs with the Province of Ontario.

4. Together with this program, another long-term commitment was gaining momentum: the development of a national flood damage reduction (FDR) program. As approved by Cabinet in 1975, the new policy represented a departure from the purely structural approach to flood problems which had been the focus of the declining CWCAA projects and which was rejuvenated under the 1968 Fraser Valley Flood Control Agreement with a different (50/50) cost-sharing formula. The structural approach, nonetheless, operated simultaneously and resulted in signif ant further expenditures. Not only had the federal commitment for the Fraser program been substantially increased from $18.5 million to $30 million in 1974, but this commitment was later doubled to $60 million in 1976 without any requirements for local cost sharing, and without prior acceptance of joint designation policies by British Columbia. The local authorities did, however, contribute right-of-way lands to the program which has, to date, resulted in funding commitments of $161 million.

5. Until the 1976-77 fiscal year, it was the practice to request new financial resources from Treasury Board on a project-by-project basis. With the approval by Cabinet of river basin planning on a priority basis in the early 1970s and the advent of the national FDR program in 1975, it was recognized that it should not be necessary to obtain resources for each new project which met federal criteria, either for flood-risk mapping or for auxiliary agreements (such as flood forecasting, control measures).

6. In December 1975, Treasury Board established a fund (initially $17.888 million) to provide a departmental base for water resources projects. Requirements for basin studies, flood-risk mapping, and federal-provincial water resource implementation projects were to be managed and funded within this expenditure ceiling. Treasury Board, in approving continuing A-base funding for Canada Water Act projects: required establishment of a system of allotment control for funds and criteria of cost and project eligibility; and an annual submission of a plan displaying five-year cash-flow projections, identifying committed funds, and proposed agreements. The "fund" thus created greatly facilitated the long-term planning of overall expenditures even though it was still necessary to seek Treasury Board approval of terms and conditions of individual contributions and cost-recovery arrangements, as well as Governor in Council authority to enter into agreements with provinces.

7. 1975-1980. Canada Water Act expenditures reached a peak of $14.3 million in the 1978-79 fiscal year. Expenditures were not rising as quickly as anticipated, however, and by the 1979-80 fiscal year a series of year-end lapses ranging between $3 million and $6 million resulted in budget cuts, reducing the ceiling to about $12 million. The following factors contributed to the lapsing of these funds and to the lowering of the Canada Water Act ceiling:

(a) New comprehensive planning investigations were not being developed or proceeding at the pace anticipated in the early 1970s when priority lists of basins were developed with the expectation of full-scale provincial interest. For example, in 1970 it was estimated that over the next five-year period the total federal requirement for such planning would be of the order of $15 million to $20 million. Actual expenditures for that period were about $10 million. In the mid-1970s the development of planning agreements remained vigorous (e.g. Souris River Basin Study Agreement signed in 1974). However, the rule established by Cabinet that the federal contribution should not exceed 50 per cent tempered provincial expectations (combined with provincial budgetary constraints).

In a notable case, negotiations with Manitoba continued for several years over the Lake Winnipeg Water Quality Study Agreement (finally signed in 1977 only to be cancelled a year later for budgetary reasons). The primary obstacle in the negotiations was the basis for cost sharing. The province maintained that the federal share should be significantly greater than the provincial share because of the inter-jurisdictional nature of the watershed upstream of Lake Winnipeg. By the time the Agreement was signed in 1977 (on a 50/50 cost-sharing basis) the political urgency for the study had declined and there were virtually no expenditures.

(b) Implementation agreements do not automatically result from recommendations contained in planning studies. While expectations of implementation have often been high during the planning period, the practical outcome has varied greatly from case to case. In certain cases (e.g. Okanagan, Qu'Appelle) full-scale implementation of many of the recommendations has taken place under subsequent federal-provincial cost-sharing arrangements.

Implementation occasionally does not materialize as quickly as originally hoped (e.g., Qu'Appelle, where the conveyance portion of the project is currently being completed under the aegis of a wholly Canada Water Act agreement, DREE's General Development Agreement subsidiary agreement with Saskatchewan having expired in 1985). Frequently there has not been federal involvement in implementation or implementation has been deferred by both levels of government.

(c) The flood-risk mapping program, as approved by Cabinet, was originally conceived to be a $20 million ($10 million federal) program concentrated into a five-year period. While both the financial and time limitations were eventually exceeded, a considerable development period was required in order to promote the program with provincial governments. Federal expenditures over the first five-year period

(1976-81), excluding those for flood control agreements (e.g. Montreal Flood Control), then increased very gradually and reached an accumulated total of only about $6 million during this period. In addition, at the end of this period, only six provinces had signed flood-risk mapping agreements with the federal government.

8. 1980 to Present. In 1979-80 and 1980-81 there was little flexibility in the Canada Water Act fund due to previous budget cuts; both operations and contributions budgets were almost fully subscribed by actual expenditures. During the next four fiscal years, however, the spread between expenditures and allotments began to widen again, with significant surpluses in contributions (in the order of $1.5 million to $3 million) being experienced in fiscal years 1982-83, 1983-84, and 1984-85. Surpluses resulted in part from the fact the ceiling had been lowered and thus becoming a new agreement target subject to slippage. In 1985-86, the annual allocation for contributions was reduced by a further $2 million, once again tightening the management of the budget. A relatively small surplus was reported in 1985-86 because a new approach was introduced of systematic over-programming as a means of dealing with lapses resulting from unavoidable problems such as construction delays. In fact, in 1986-87, expenditures exceeded allocations by at least $600,000 as the result of a temporary one-year reduction of $300,000 to the contributions budget. This shortfall was only offset by the location of surplus DOE contribution monies, outside the Canada Water Act fund.

9. The basis for continuo - expenditures under the Canada Water Act budget was developed over a decade ago in the form of several more or less long-term programs: Fraser Flood Control, Prairie Provinces Water Board, Great Lakes Water Quality, and the National Flood Damage Reduction Program (including flood-risk mapping and related agreements such as flood forecasting and Manitoba Dyking). Recent annual expenditures for these core programs have amounted to over $7 million out of a total annual allocation of $9.2 million. The remaining $2.2 million leaves little flexibility in the management of the Canada Water Act budget since most of this remainder is available only in the form of operations monies which cannot be transformed into contributions to provinces. Thus a potential backlog situation has been created where Environment Canada may have to postpone sound projects as a result of the budget being fully committed several years in advance.

10. The Canada Water Act and/or the Environment Act have been used as enabling legislation for a number of water projects which have been funded from external sources. Generally these projects fell under the broad intent of the legislation but did not meet specific guidelines defined for funding from the Canada Water Act resources, or would have resulted in the funding ceiling being exceeded. Figure 2 displays such projects and includes a number which were initiated before the establishment of the CWA resource ceiling. A number of recent projects of a special type, primarily of a water and sewer infrastructure nature are listed below:

- Contributions to the Province of Ontario for the Sewage Treatment Facilities Construction Program under the Canada/Ontario Great Lakes Water Quality Agreement (total commitment: $65 million).

- ERDA contributions to the Province of Saskatchewan for water treatment systems in Regina and Moose Jaw (total expenditure: $5 million).

- Contributions to the Province of Ontario under the Canada/Ontario Agreement Respecting Special Recovery Capital Projects for Timmins and the Regional Municipalities of Sudbury and Niagara (total commitment: $9.5 million).

- Contributions to the Province of Newfoundland for a water treatment facility, Channel Port-aux-Basques (total commitment: $6.5 million).

The federal government recently adopted a new policy to deal with the municipal infrastructure issue. In essence, it assumes that the most efficient and equitable solution lies in a beneficiary/polluter pays concept. The federal role lies in technology development and transfer, servicing federal facilities, and funding only in limited circumstances, when federal and provincial development priorities coincide.

11. Regional Distribution of Canada Water Act Expenditures. Figures 3 to 7 indicate the patterns of Canada Water Act expenditures since 1970 for each of the five regions of the Water Planning and Management Branch. A distinction is made between flood control and non-flood control (planning, implementation, and flood risk mapping, etc.) expenditures. Historically, the greatest expenditures on flood control projects have taken place in the Quebec, Ontario, and Pacific and Yukon Regions. It should be noted, however, that no expenditures for flood control have occurred in the Ontario Region since 1978-79, partly as a consequence of the discontinuation of the Southwestern Ontario Dyking Program which was severely criticized in the Auditor General's Report for the year ended March 31, 1978. These Figures do not include other sources of federal funding, such as CMHC's financial contributions to municipal sewage treatment facilities during the period 1961-80, nor to programs such as those established under the GDA and ERDA subsidiary agreements for water supply and sewage facilities for agricultural service centres in the prairie provinces and DREE's contribution under the subsidiary agreement for Qu'Appelle implementation.

12. The initial activity under the Canada Water Act assumed the availability of funds for many water-oriented projects under CMHC and DREE/DRIE. With the termination of the CMHC program and the drying-up of DREE funds for resource management studies there was a need for a mechanism through which the federal government could make financial contributions on a special basis. Since the funds were made available

from sources outside the Department and were for purposes such as honouring a Canada/U.S. commitment, or in support of economic and regional development the agreements do not constitute a "regular program" under the Canada Water Act. While predictions of future special projects are difficult to make, it is expected that the government will want to continue to handle future implementation on a case-by-case basis.

13. In the Atlantic, and Western and Northern Regions, expenditures on flood control have been relatively minor compared to the overall requirements of those two regions (excluding the Red River Valley Floodproofing Program which was funded outside the regular Canada Water Act ceiling). The Western and Northern Region, however, leads in terms of the greater number and diversity of water resources agreements (see Figure 1). This situation reflects wide governmental interest in the critical water management issues characteristic of this region such as the utilization of water resources in water-short prairie basins such as the South Saskatchewan.

14. A similar diversity of interest in water planning agreements has existed in the Atlantic Region, though on a smaller scale frequently involving work-sharing arrangements. The only ongoing large-scale project in the Atlantic Region, Port-aux-Basques water treatment, is not funded from Canada Water Act resources. Planning studies have occasionally led to cost-shared implementation projects in the case of the flood damage reduction agreements (e.g. Marsh Creek flood control

Project, which was never completed due to the failure of the City of Saint John to acquire the necessary lands). In addition, a moderate dyking project has been proposed by the Province of Newfoundland for Placentia, a community on the Avalon Peninsula. The current planning thrust in the Atlantic Region is towards work-sharing arrangements focusing on water issues in relation to water conservation, ground water and economic development (e.g. the agreement with Prince Edward Island).

CHAPTER III - EVOLVING TIMES - THE IMPORTANCE OF HORIZONTAL INFLUENCE

1. A major benefit of the Canada Water Act programs has related to the selection of appropriate socio-economic investments and the facilitating of institutional change. Such benefit goes beyond the myriad of completed projects, studies and plans that have been highlighted elsewhere in this report. Though less tangible, such indirect benefits are no less significant.

2. Under the Flood Damage Reduction program, for example, there are now over 60 designations in place, covering more than 300 communities and some seven million Canadians. These designations and associated policies are reducing potential flood damages through measures which ensure flood prone development does not take place - thereby limiting future flood disaster assistance payments and demands for mitigative works. At the federal level, a variety of agencies, such as CMHC, are required to respect the designations under terms of the federal-provincial agreements.

3. Significant savings in capital costs have been facilitated through the more comprehensive evaluation of solutions in water planning. One example highlighted earlier in this report was the rejection of water importation to the Okanagan Basin in favour of water conservation and improved regulations and management. A second was in the finding of the St. Lawrence Water Quality Study that secondary treatment of Montreal's waste effluent would be less beneficial than control of toxic chemical wastes and careful siting of industrial discharges.

4. The joint federal-provincial planning exercises carried out under the Act, some 25 in number, have represented a substantial change from the established order in Canadian water management. Prior to the passage of the Act, the federal effort was focused almost exclusively on water quantity (data gathering and studies of available supply, and structural solutions to manipulate that supply). Following passage of the Act, there has been an insistance that the federal government be involved in joint planning before deciding on whether it would become involved in implementation. This has meant that a variety of concerns other than engineering and cost sharing were introduced, including legal, economic, social and administrative aspects, as well as water quality and environmental impacts.

5. The role of the public in the planning process was also greatly enhanced and reports were generally made available so that a more informed judgement could be made. For the public, the process has also been educational, creating awareness of the real cost of each interest's choices on other interests, and of the limitations on nature's resilience. For many, it has simply provided an insight into water problems and removed a tendency to suggest unrealistic solutions.

6. Provincial water management has been enhanced in a variety of ways through Canada Water Act Agreements. These agreements and the federal funds made available under them have led to the dedication of equivalent provincial funds, a situation which may not have applied had

the funding been sought on an ad hoc basis with provincial governments. Through the consideration of various alternatives, and expert and public inputs, some costly alternatives, quick-fixes and publicly unacceptable actions were avoided. Recommendations of federal-provincial Boards, for example, were often directed to other provincial or federal departments. Based on their federal-provincial basin planning experience, some provinces have proceeded with similar programs on their own.

7. The Flood Damage Reduction Program also illustrates how provincial water management has been enhanced. The commitments made in the federal-provincial agreements have generated a coordination function within the provincial governments. In some cases, coordination has gone beyond that specified by the Agreement. In New Brunswick and Manitoba, Municipal Affairs officials are on the FDR Steering Committee, while in Quebec, municipalities are now required by legislation to zone on the basis of flood risk maps or else the province will impose the zoning.

8. Better federal-provincial relations have inevitably resulted from these exercises, owing to the shared nature of tasks and the consensus-forming nature of joint planning boards and committees under formal agreements. The cooperative approach, with frequent exchanges of views and sharing of assignments, has built a high level of trust among water officials. This goodwill has opened doors in relation to other departmental endeavours, and generated useful cooperation in these other areas.

9. Several federal agencies other than DOE have roles on the water front whose importance in water management ranges from major to marginal. These include Agriculture, Fisheries and Oceans, Regional Industrial Expansion, Indian Affairs and Northern Development, National Health and Welfare, and Transport.

10. None of these other agencies focus their attention exclusively on water management. Rather, they speak for certain legitimate sectoral interests such as fish, navigation, hydro power or water treatment. The Canada Water Act process has assisted in weighing the needs of these various interests, rather than promoting any one of them in isolation.

11. DOE has inherited the federal interest in a number of core programs as described in Chapter II, and the Treasury Board decision establishing the CWA fund assumes a continued responsibility. These programs have consistently provided DOE with horizonal influence well beyond the level of direct expenditure. This varies from a high in the case of the Flood Damage Reduction Program (because of the variety of federal and provincial programs affected) to a low in relation to certain capital works related to very specific projects. Many programs, though small in terms of expenditures, have nonetheless had significant influence. For example the English-Wabigoon and Northern Manitoba mercury studies involved federal fisheries, native and health interests; the results of these studies with respect to mercury contamination have proven of interest on a national scale. Environment Canada's main interest was in research application and transfer. While the agreements were financed from the Canada Water Act fund, follow-through action has

devolved to the agencies representing specific interests. In these instances, the CWA fund has, in reality, provided seed money, which in turn, leveraged greater expenditures by other jurisdictions.

12. The Pearse Inquiry on Federal Water Policy was conducted as a Canada Water Act activity, but also covered a broad spectrum of federal interest in water, and has resulted in an unprecedented level of dialogue and cooperation amongst federal agencies with water-related programs. The follow-up to the inquiry is currently affecting, in a very fundamental way, the manner in which Canadians view the resource e.g. the ongoing public debate on municipal infrastructure and water pricing.

13. An important aspect of some of the continuing CWA arrangements is the reduction of potential interjurisdictional disputes. Examples include the Ottawa River Regulation Agreement, under which several federal and provincial agencies use common computer models to guide their reservoir operating decisions, and the Prairie Province Water Apportionment Agreement under which an interjurisdictional board oversees the sharing of easterly flowing rivers in the three Prairie Provinces.

14. The CWA process has not been perfect. Complaints have included the long time required for planning or mapping, the lack of obvious follow-through in some cases, the apparent inflexibility of some of the "rules", and in some cases the raising of false expectations.

15. Nevertheless, it is the view of the Study Team that the Canada Water Act, and the availability of the relatively modest fund associated with it have resulted in major and positive changes in approaches to Canadian water management, and that the impact of the changes go well beyond the direct expenditures. Some may argue that these changes would have resulted anyway over time. The fact remains, however, that these programs have been, and can continue to be a vehicle of change and of new perspectives in Canadian water management. We are of the view that they will leave a lasting impact on governmental agencies and Canadian citizens.

CHAPTER IV - FINDINGS

I - A Changing Climate

1. The federal government is in the midst of re-examining its approach to water management in Canada. The findings of the 1984-85 Inquiry on Federal Water Policy together with subsequent efforts to review a decade-old water policy have helped focus attention on the Canada Water Act and its contribution to this policy. As work on this policy proceeded, Environment Canada emerged clearly as the co-ordinating lead agency on the subject of water, a role that has evolved naturally out of the very broad framework nature of the Canada Water Act. Environment Canada is well positioned, based on long experience with horizontal management, to play this co-ordinating role.

2. Work on Canada's water policy has also coincided with historic discussions on Canada's constitutional future at Meech Lake. This development clearly signals a shift in the role of the central government to one that more readily adapts to provincial or regional sensitivities, as well as one which will find itself developing new national programs that include "opting out" options for provinces. The Canada Water Act, by its nature, will be able to adjust to such change, though the nature of new programs could differ from such existing programs as the FDR Program.

3. The development of policy has also been influenced by the shift in emphasis of the CWA to include water quality concerns on a par with

quantity considerations. This factor, together with the complexities of dealing with water management issues in Canada's North indicates that Part II of the Act, though never implemented, has the potential to provide mechanisms in support of the resolution of conflicts that could arise in either situation. Part II should, therefore, be retained for the foreseeable future.

4. The Canada Water Act has found itself under considerable scrutiny in the context of such change. As DRIE moved out of the funding of resource management studies and CMHC abandoned infrastructure development programs there have been pressures on Environment Canada to move into these areas. A whole range of opportunities has also been opening up in the wake of the Inquiry on Federal Water Policy and other aspects of the review of Canada's water management policies.

II - Water: A Commodity with Real Value

5. The study team agreed that water should be viewed as an essential commodity in the broadest sense ranging from its role as a basic element in biospheric survival through fundamental support to the economy to basic leisure time enjoyment. Thus, the major issue is to sustain the quality and quantity of water necessary to support these activities. It is within this context coupled with the increasing prominence of environmental and socio-economic public awareness that the study team recommends that Environment Canada:

1. define and promote the economic value of water within the environment-economy initiative;

2. continue to reduce data deficiencies north of 60° through intensified data collection and preplanning studies;

3. determine ways to optimize the use of current data and scientific knowledge;

4. engage in activities which support "security of supply" and "management of demand" such as through public awareness and education, encouraging the establishment of real values and appropriate pricing, promoting a change in attitude from consumer to conserver, and demonstrating the value of broad based alternative examination, including changes in what, or how something, is done;

5. adopt an integrated planning approach for specific needs and more comprehensive conservation strategies (e.g. include water use, land use, etc.);

6. encourage the use of more environmentally compatible "works" and promote environmental industries by demonstrating technological leadership in this area;

7. assume the federal lead in ground water matters with a view to eventually affecting technology transfer to other jurisdictions.

III - Resources

6. The review of water policies in general, and more specifically the evaluation of the effectiveness of the Canada Water Act has identified a number of needs that warrant significant attention. These needs are important in meeting both the intent of the Canada Water Act and the stated objectives of Environment Canada. Current priorities driving the administration of the Canada Water Act have committed its budget for some years into the planning horizon. Clearly, new initiatives or a shift in emphasis will be difficult to consider with this constraint.

The study team stresses the importance of refocusing efforts under the Canada Water Act. The study team concludes, in fact, that such shifts in emphasis warrant an examination of existing priorities, and offer the following recommendations for increasing flexibility in funding:

(a) The Flood Damage Reduction Program should be "phased down" over a five-year period, and efforts should be concentrated on the development of low-cost maintenance programs designed to protect the integrity of the policies and agreements that have been developed to date. It is the view of the study

team that, by the end of the five-year period, such a maintenance program for mapping and designation could be effectively managed with an annual contribution of approximately $1,000,000.

Coincidental with this effort, the federal funding for new flood control works of national significance should be found from outside the Canada Water Act, paralleling the policy currently in place concerning the federal funding of municipal infrastructure projects. The study team believes that other flood control works primarily of provincial or local significance should be funded by other levels of government.

(b) More use should be made of work-sharing arrangements with others in pursuit of applied research efforts, or socio-economic studies. A major input from the federal government would be provided by the Research Institutes, which would provide a major opportunity to effect technology transfer. Socio-economic expertise is available in the Water Planning and Management Branch at both Regional and Headquarters levels.

(c) Cost recovery has proven successful as an income generator in other areas of the department. It is important that within the broader context of the Canada Water Act all opportunities for cost recovery should be acted upon. Work should begin immediately to develop this suggestion further.

IV - Management Thrusts

8. In concert with the foregoing, the study team concludes that management should either be aware of, support, or engage in, the following:

(a) opportunistically, achieve objectives through EDAs and ERDAs and their companion sub-agreements;

(b) strengthen internal as well as external communication efforts;

(c) ensure that credit is obtained for A-base activities;

(d) focus management efforts on broad policy direction rather than specifics;

(e) recognize the increasing importance of regional sensitivities and increasing provincial independence expected to follow the Meech Lake Constitutional Accord through more equitable funding, broader approaches to accommodate regional-specific issues and the re-establishment of the consultative committees under Part I of the Act;

(f) ensure that the expertise and high-tech capability resident within C&P, Parks Canada and the AES is fully exploited in pursuit of Canada Water Act activities;

(g) recognize that with increasing awareness and probable increase in litigation, the requirement or pressure to provide advice to third parties will increase;

(h) recognize that "consultation" and "communication" should be fundamental and inherent parts of any strategy;

(i) recognize that the Interdepartmental Committee on Water should continue to play a vital role, but requires refocusing along the lines of the revised terms of reference already proposed by that Committee;

(j) ensure that the recently initiated review of federal legislation concerned with water management consider the findings of this evaluation.

Finally, the Study Team notes that most provinces now view the Canada Water Act as an essential mechanism for coordination of federal and provincial water management initiatives. Significant changes to the Act or to its funding processes could be reviewed with alarm by our provincial counterparts. Change must therefore be approached carefully and with sensitivity.

APPENDIX 1 - EVALUATION OF CANADA WATER ACT AND FUNDING

A. Study Team:

D.A. Davis, Director General, Inland Waters/Lands
J.E. Vollmershausen, Director General, Conservation & Protection, Atlantic Region
B.M. Burns, Director General, Conservation & Protection, Western & Northern Region
J.A. Jackson, Director General, Internal Audit Branch, DOE
P.R.W. Gore, Director, Evaluation, Corporate Planning Group, DOE
R.L. Pentland, Director, Water Planning & Management, IW/L

B. Terms of Reference

1. Review the Canada Water Act and prepare a summary of the range of activities possible under the legislation. Evaluate the potential interrelationship and leverage related to other Service and Departmental legislation and programs.

2. Document historical operational, grants and contributions expenditures.

3. Evaluate the historical utilization of the Canada Water Act operational, grants and contributions funding and describe trends or patterns in the types of programs for which the funds have been applied. Also evaluate the historical funding patterns from a national distribution perspective.

4. Identify changing external circumstances that have impacted upon utilization trends such as elimination of CMHC infrastructure funding, scaling down of DREE water activities and changing water resource role of fisheries.

5. Examine and evaluate present and proposed expenditure plans and prepare comments and recommendations on;
   a) relevance of expenditures to the priorities of the Service, department and federal government;
   b) degree of flexibility in view of "locked in" long term commitments;
   c) possible new directions or changed emphasis;
   d) potential sensitivities to be considered if changes are made;
   e) management practices related to CWA funding.

6. The final report is to be submitted to ADM, C&P by August 10, 1987.

C. Reference Documents

1. Canada Water Act.
2. Documentation from Treasury Board establishing Fund.
3. Canada Water Act Annual Reports (1973/74 to 1985/86).
4. Previous evaluation and Auditor General Reports.
5. Inquiry on Federal Water Policy.
6. Canada Water Act, 1986 Submission to Treasury Board on Long Term Operational Plans (Similar plan prepared annually).
7. Various Treasury Board and DOE documents dealing with cuts.

Time Sequence of Cost Shared Federal–Provincial Water Resources Projects

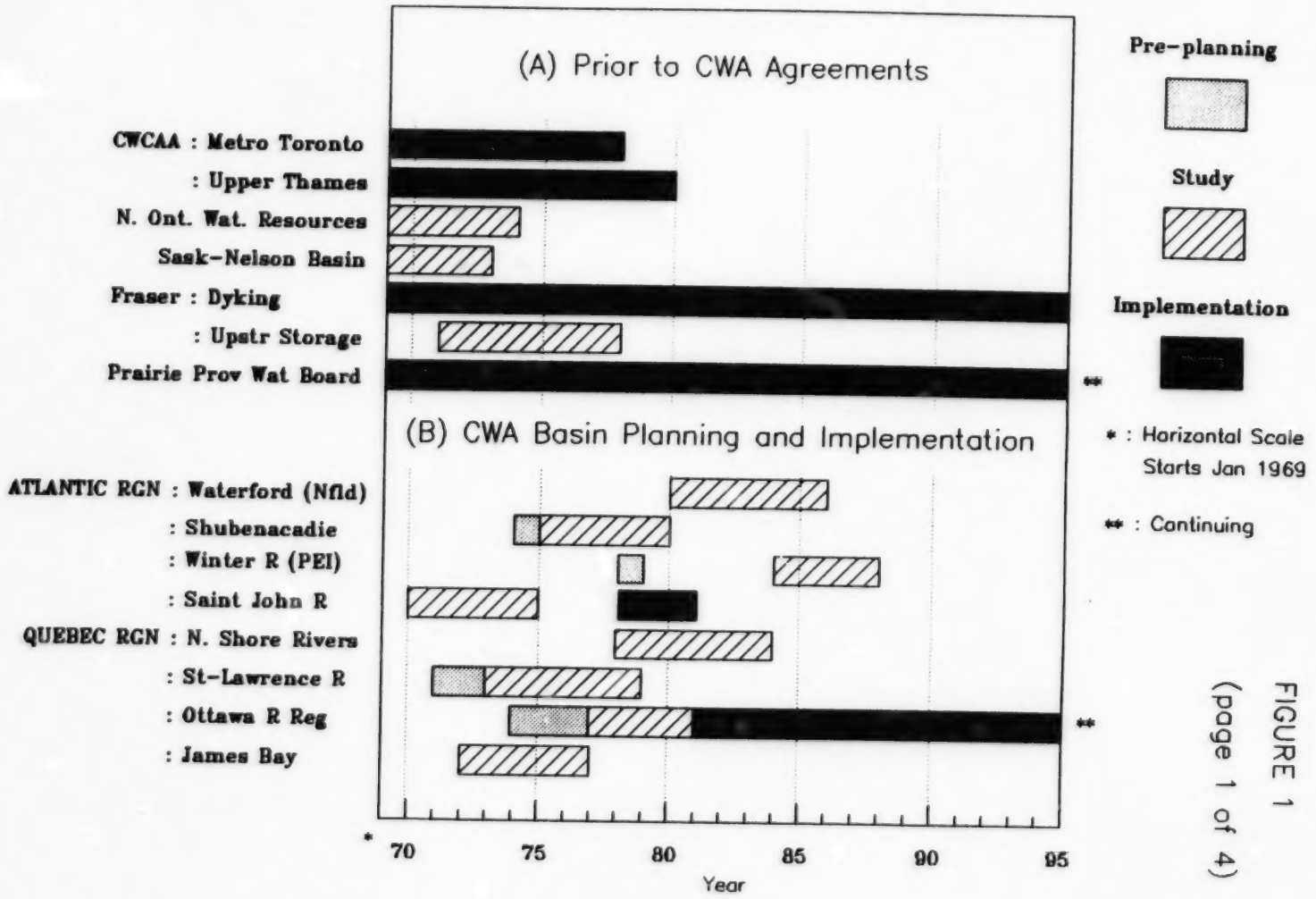
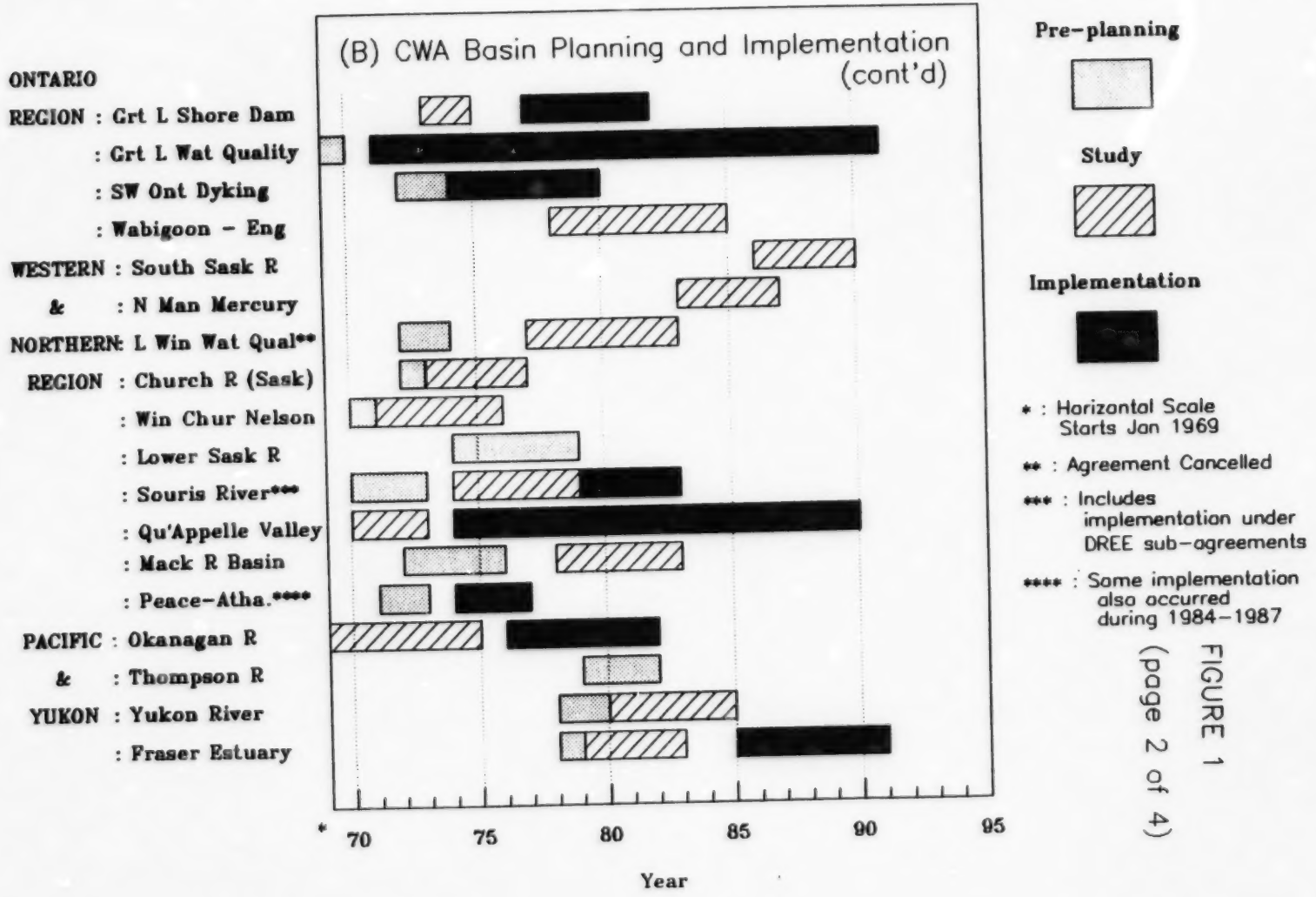


FIGURE 1 (page 1 of 4)

Note: Proposed projects are not plotted

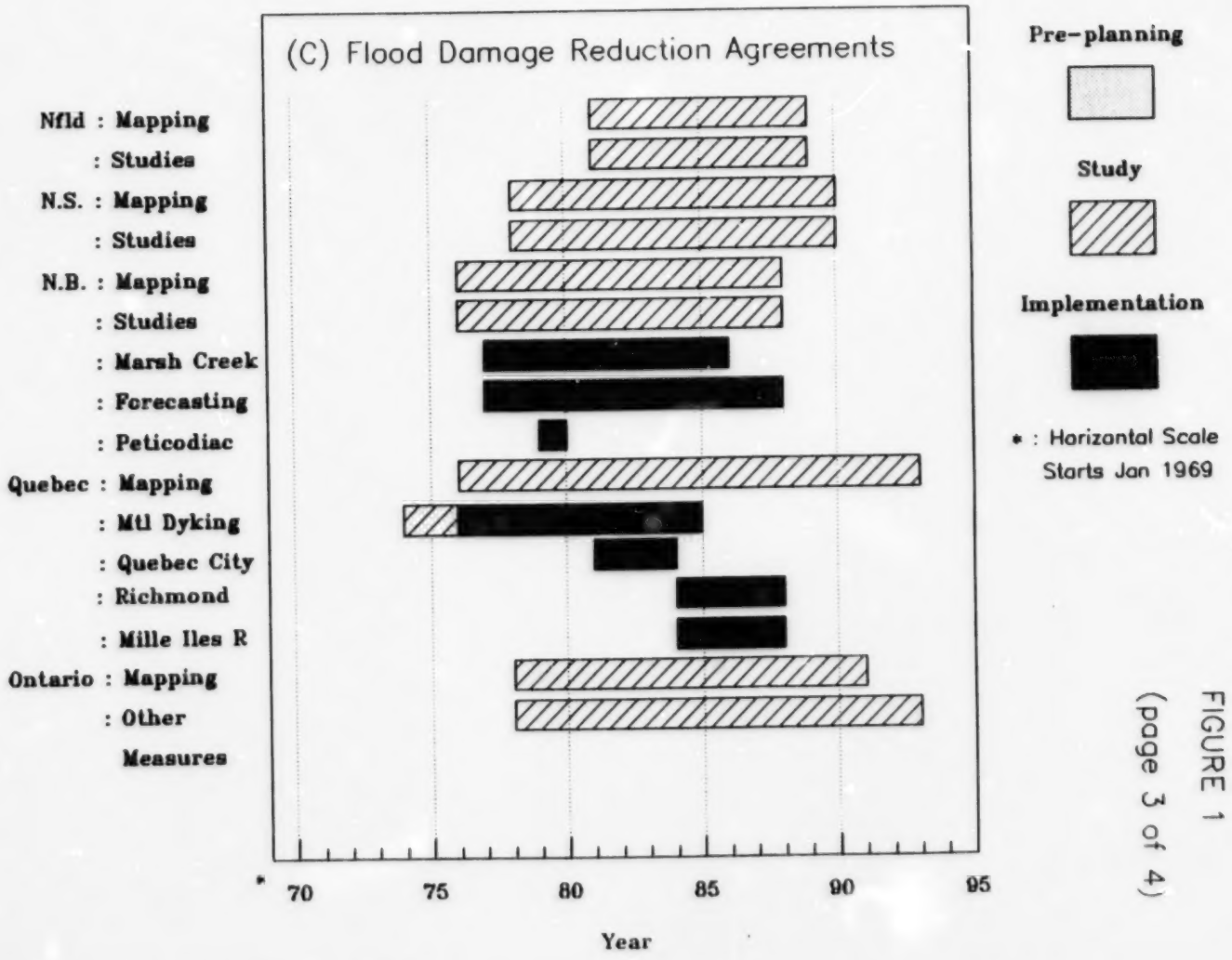
Time Sequence of Cost Shared Federal–Provincial Water Resources Projects


(B) CWA Basin Planning and Implementation (cont'd)
ONTARIO
REGION : Grt L Shore Dam
: Grt L Wat Quality
: SW Ont Dyking
: Wabigoon - Eng
WESTERN : South Sask R
& : N Man Mercury
NORTHERN: L Win Wat Qual**
REGION : Church R (Sask)
: Win Chur Nelson
: Lower Sask R
: Souris River***
: Qu'Appelle Valley
: Mack R Basin
: Peace-Atha.****
PACIFIC : Okanagan R
& : Thompson R
YUKON : Yukon River
: Fraser Estuary
* 70 75 80 85 90 95
Year
Pre-planning
Study
Implementation
* : Horizontal Scale Starts Jan 1969
** : Agreement Cancelled
*** : Includes implementation under DREE sub-agreements
**** : Some implementation also occurred during 1984–1987

Note: Proposed projects are not plotted

FIGURE 1 (page 2 of 4)

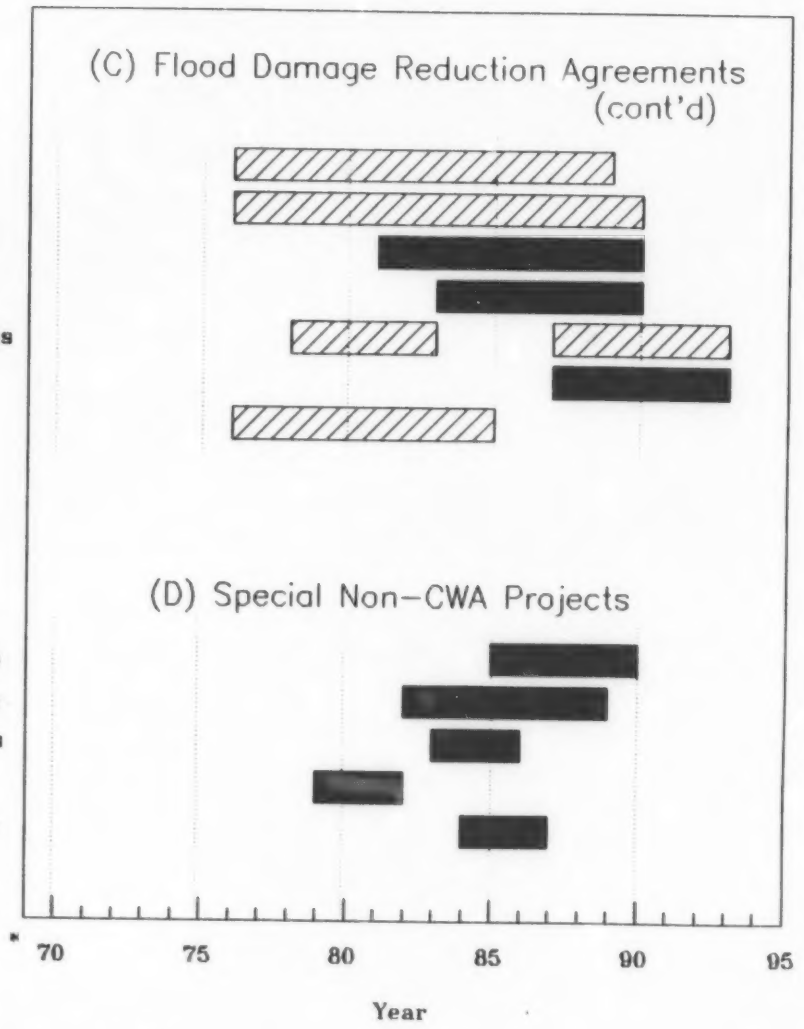
Time Sequence of Cost Shared Federal–Provincial Water Resources Projects



Note: Proposed projects are not plotted

FIGURE 1 (page 3 of 4)

Time Sequence of Cost Shared Federal–Provincial Water Resources Projects



Manitoba : Mapping
: Studies
: Forecasting
: Dyking
Sask : Mapping & Studies
: Measures
N.W.T. : Mapping
Alberta : Mapping **
B.C. : Mapping ***

Nfld : Port–aux–Basques
Ont : Gt. L. Sewerage Fac
: Spec Recov Projects
Man : Floodproofing
Sask : Regina–Moose Jaw

Pre–planning

Study

Implementation

* : Horizontal Scale Starts Jan 1969

** : Alberta Mapping Agreement under negotiation

*** : Draft Can–B.C. Mapping Agreement negotiated

Note: Proposed projects are not plotted

FIGURE 1
(page 4 of 4)

PROFILE OF CANADA WATER ACT FUNDING AND EXPENDITURES ON SPECIAL PROJECTS NATIONAL

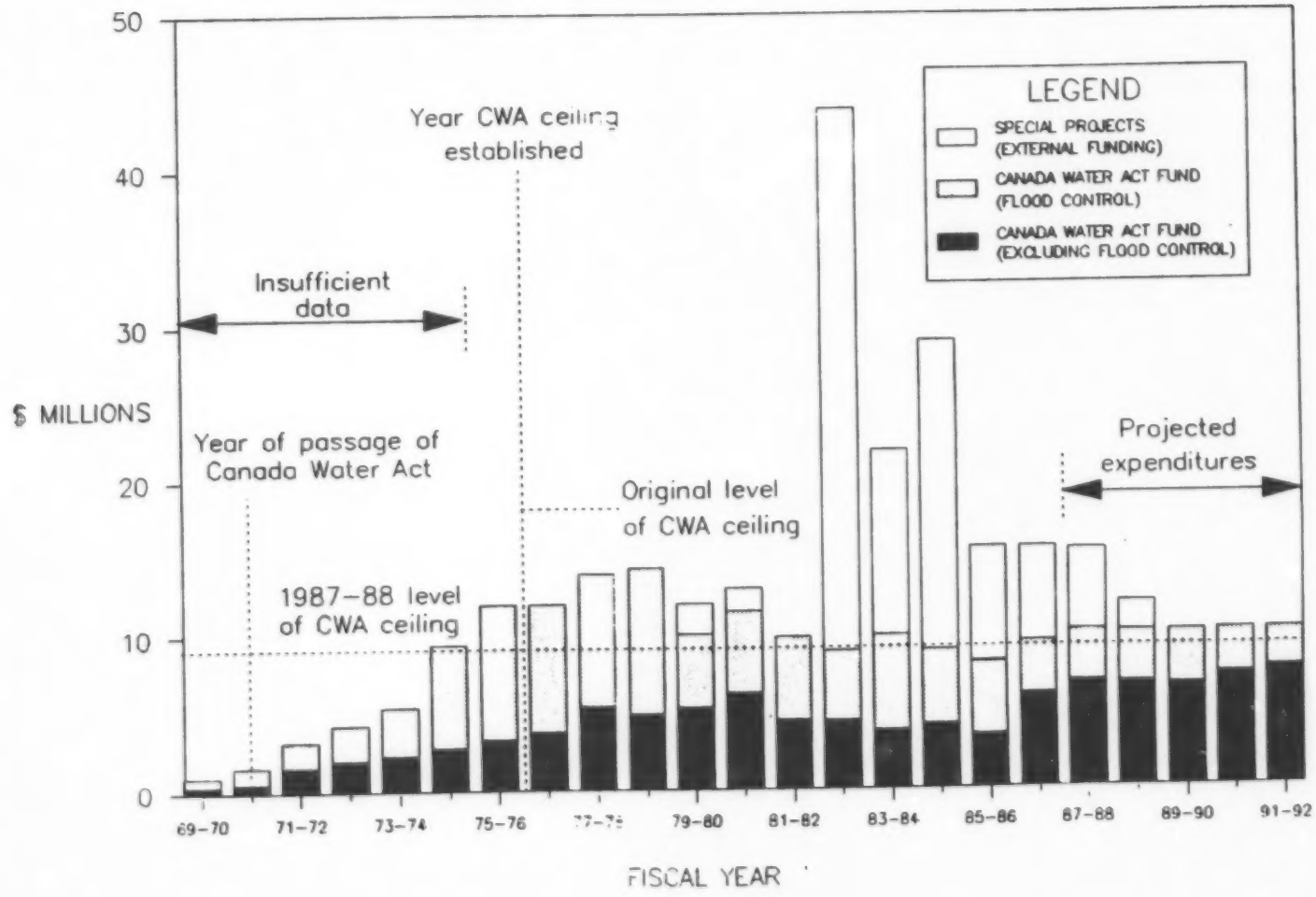


FIGURE 2

PROFILE OF CANADA WATER ACT FUNDING AND EXPENDITURES ON SPECIAL PROJECTS ATLANTIC REGION

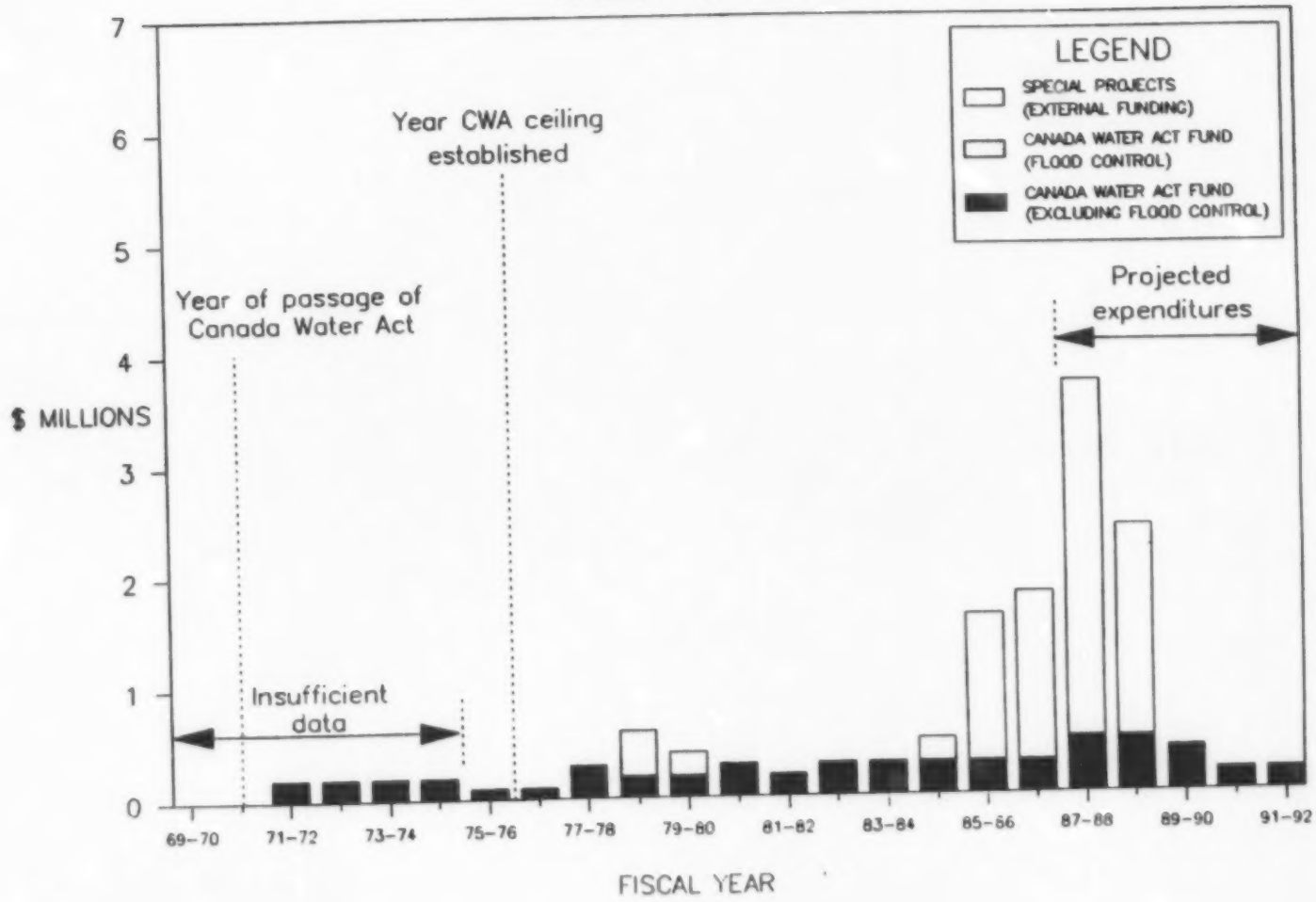


FIGURE 3

PROFILE OF CANADA WATER ACT FUNDING AND EXPENDITURES ON SPECIAL PROJECTS QUEBEC REGION

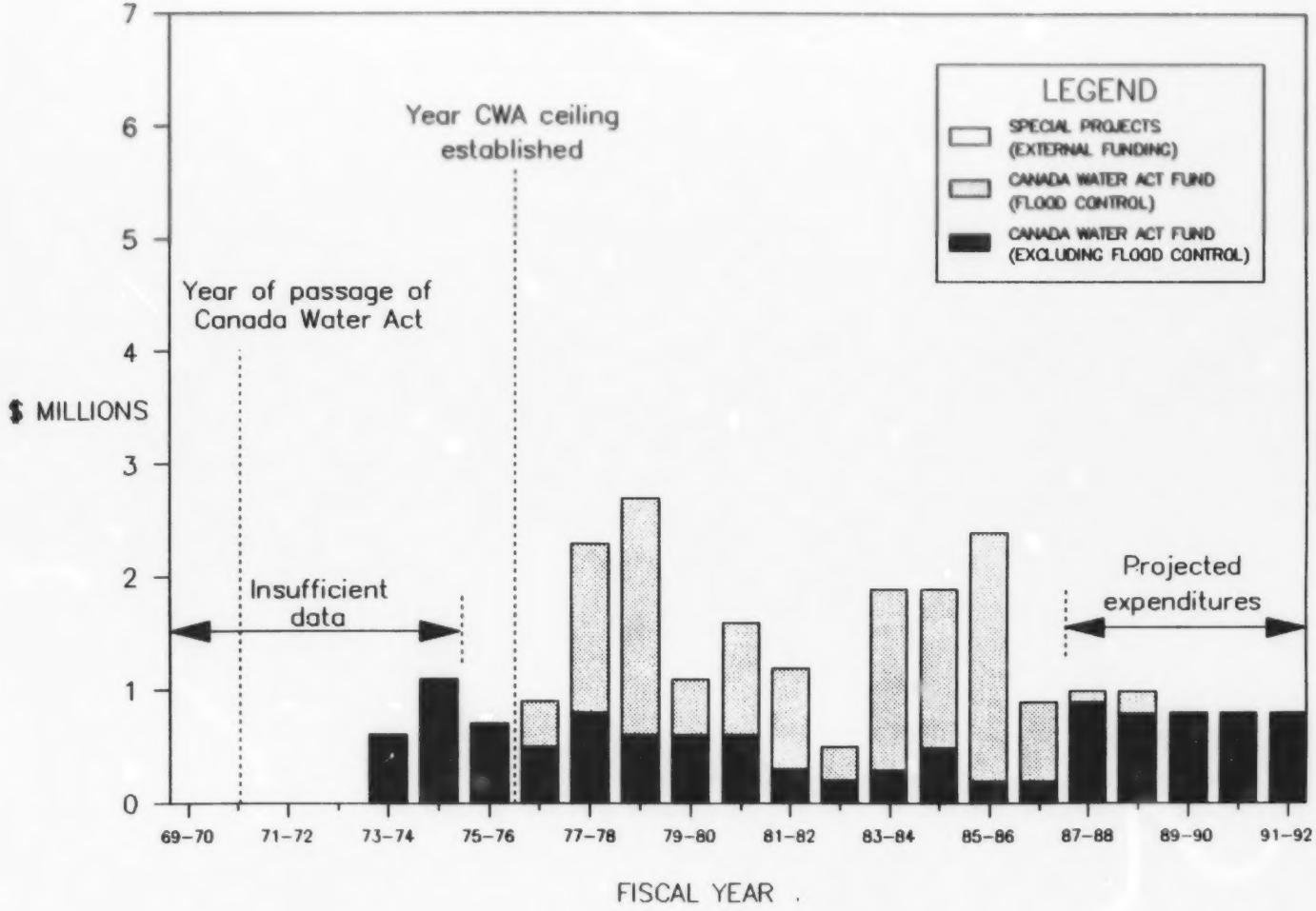


FIGURE 4

PROFILE OF CANADA WATER ACT FUNDING AND EXPENDITURES ON SPECIAL PROJECTS ONTARIO REGION

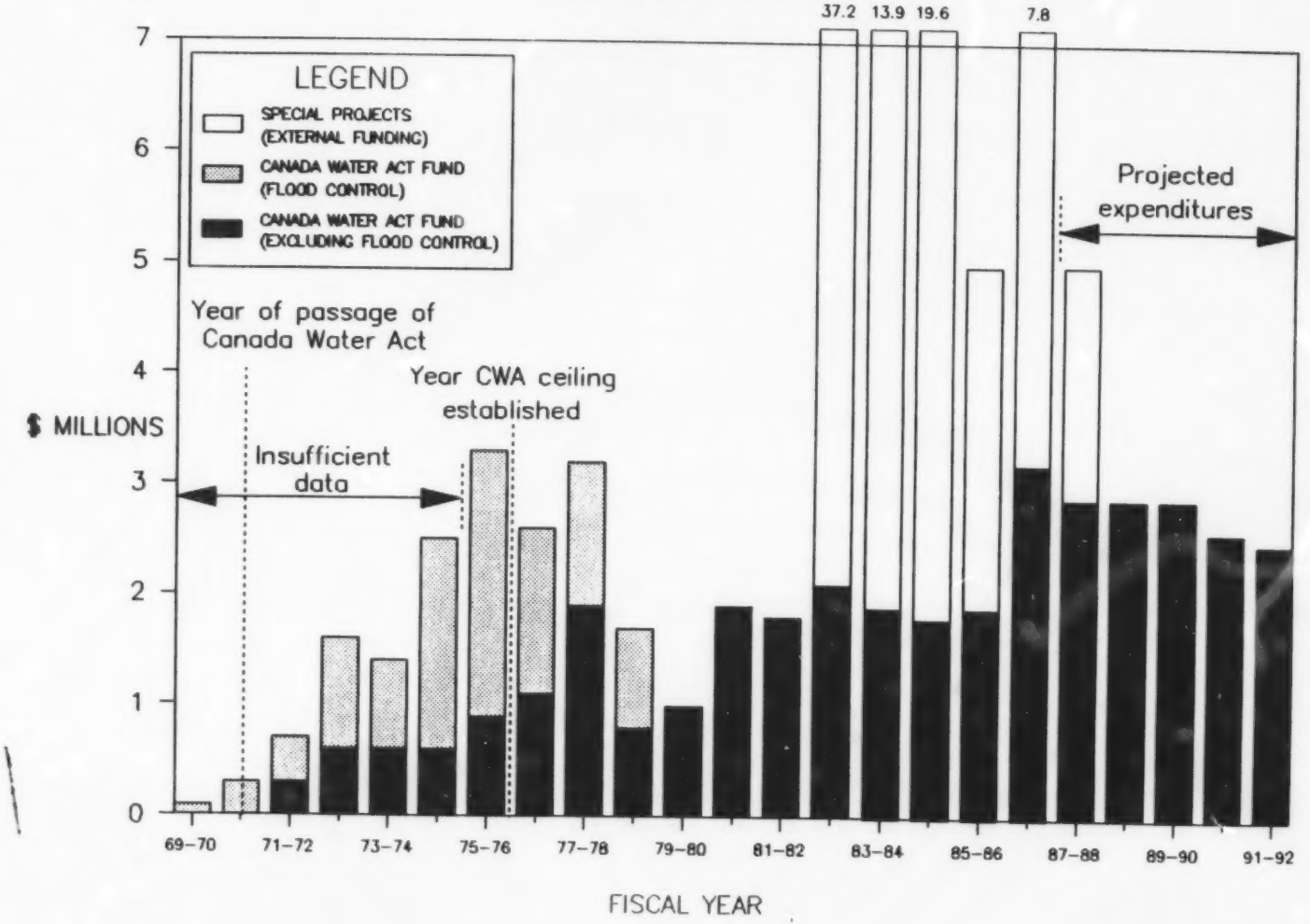


FIGURE 5

PROFILE OF CANADA WATER ACT FUNDING AND EXPENDITURES ON SPECIAL PROJECTS WESTERN AND NORTHERN REGION

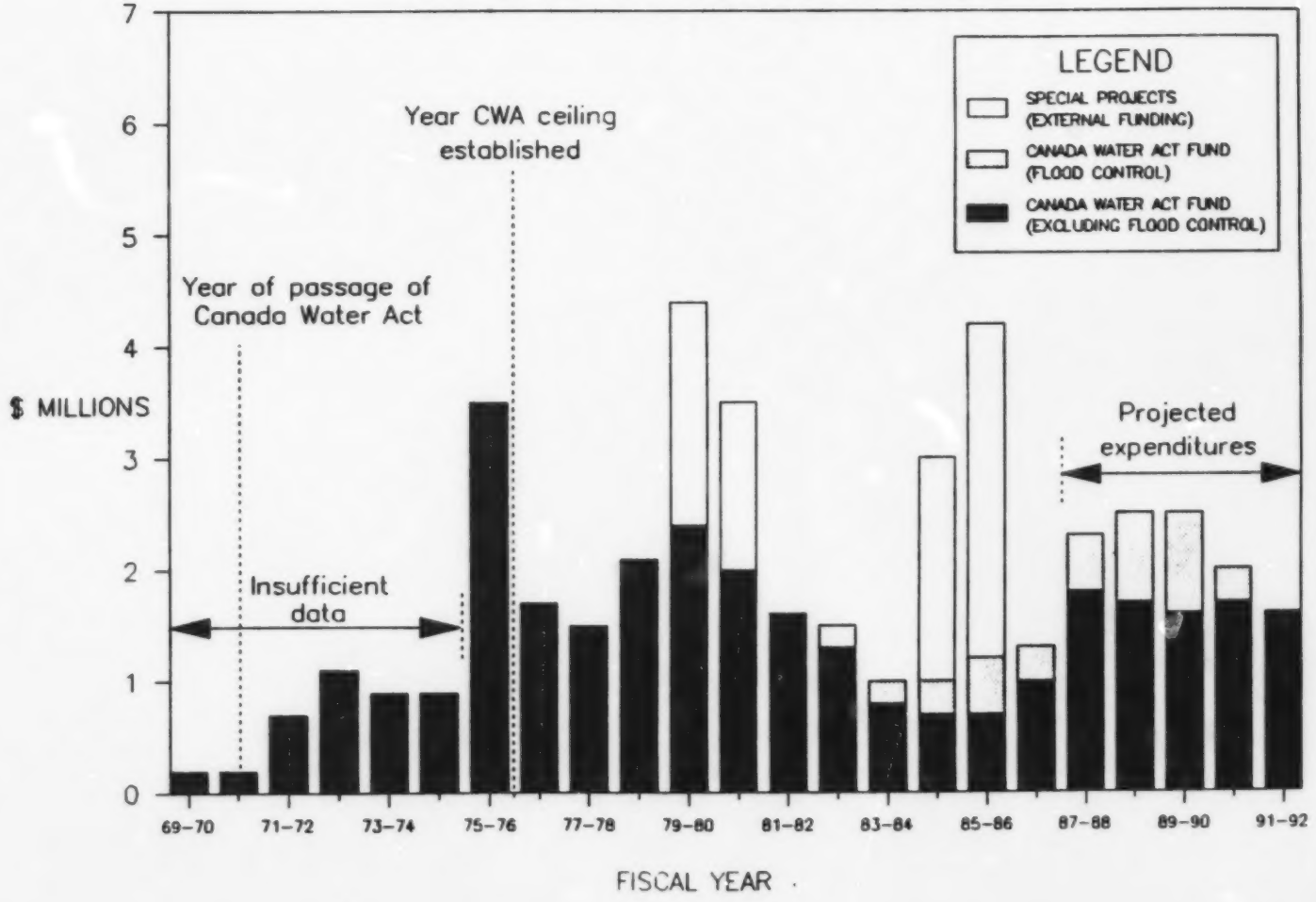


FIGURE 6

PROFILE OF CANADA WATER ACT FUNDING AND EXPENDITURES ON SPECIAL PROJECTS PACIFIC AND YUKON REGION

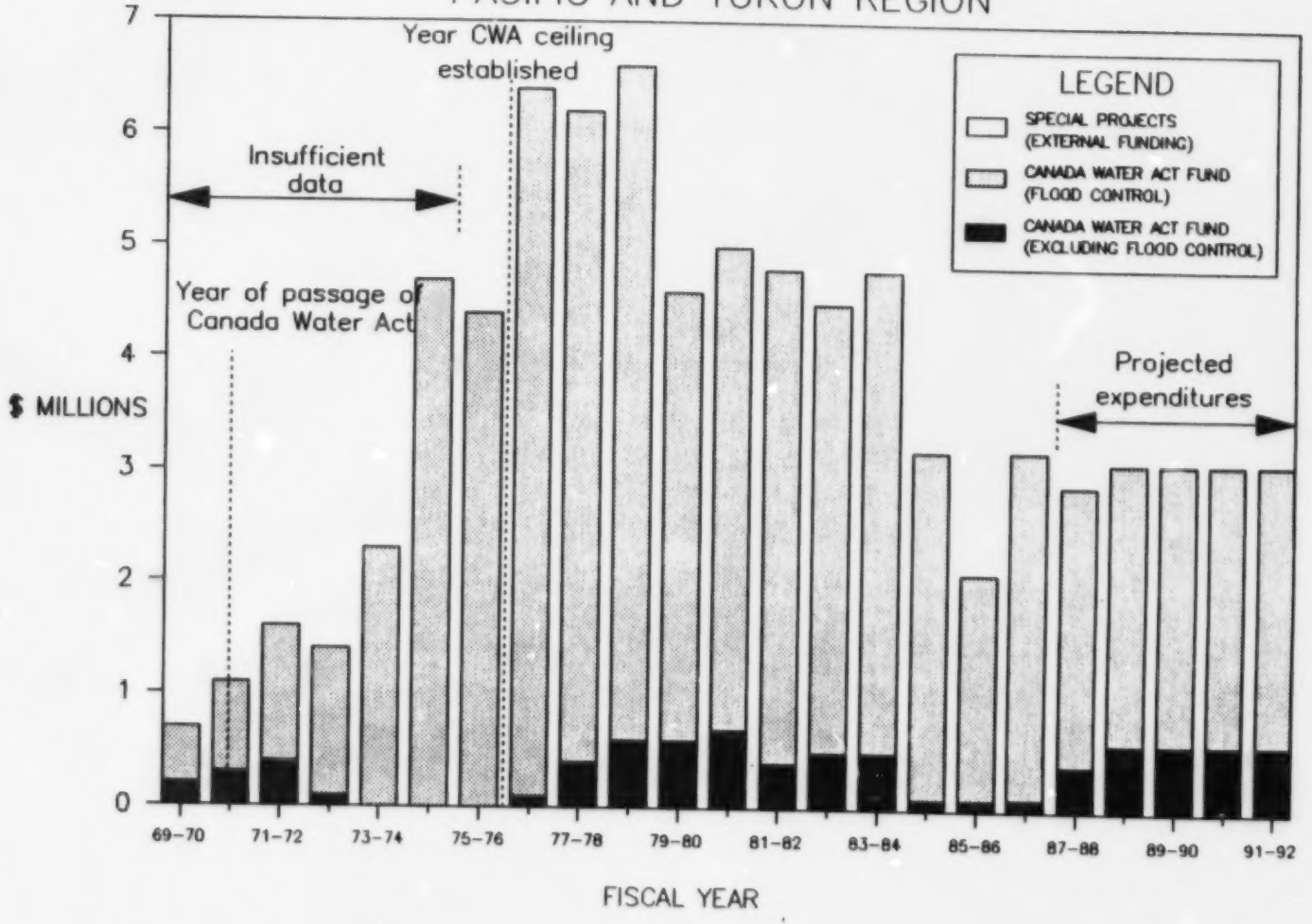


FIGURE 7